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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,480	05/10/2005	Thomas Durbaum	DE02 0261 US	7009

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NXP, B.V.  
NXP INTELLECTUAL PROPERTY DEPARTMENT  
M/S41-SJ  
1109 MCKAY DRIVE  
SAN JOSE, CA 95131

EXAMINER
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PHAM, EMILY P

ART UNIT	PAPER NUMBER
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2838

NOTIFICATION DATE	DELIVERY MODE
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02/13/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/534,480	<b>Applicant(s)</b> DURBAUM ET AL.	
	<b>Examiner</b> EMILY PHAM	<b>Art Unit</b> 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-9 are rejected under 35 U.S.C. 102(a) as being anticipated by Gavrilă et al (USP 7,157,809).

Regarding claim 1: Gavrilă et al (**FIG 12**) discloses power converter comprising: a current path that includes an inductor (**Inductive DC Converter**) having an input (**V<sub>in</sub>**) for receiving energy from a power supply and an output capacitor (**C<sub>out</sub>**) for providing an output voltage (**V<sub>out</sub>**); an additional current path (**path between V<sub>out</sub> and Ground**), beginning at an output of the inductor (**Inductive DC Converter**) and including a circuit element (**Z<sub>load</sub>**) that causes the additional current path (**path between V<sub>out</sub> and Ground**) to be opened and closed, said additional current path (**path between V<sub>out</sub> and Ground**) formed such that a current flowing through said additional current path (**path between V<sub>out</sub> and Ground**) reaches basically immediately a desired value, when said additional current path (**path between V<sub>out</sub> and Ground**) is opened; and a feedback circuit (**FB**) that opens said additional current path (**path between V<sub>out</sub> and Ground**), when said output voltage (**V<sub>out</sub>**) across said output capacitor (**C<sub>out</sub>**) reaches a predetermined maximum value (**predetermined maximum value of output voltage is decided by the value of Z<sub>load</sub>**), wherein the inductor (**Inductive DC Converter**)

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provides the energy from the power supply (**Vin**) to a parallel arrangement of the output capacitor (**Cout**) and the additional current path (**path between Vout and Ground**).

Regarding claim 2: Gavrilă et al (**FIG 8**) discloses power converter, wherein said additional current path (**path between Vout and Ground**) comprises a controllable current source (**Isrc**).

Regarding claim 3: Gavrilă et al (**FIG 1, FIG 3**) discloses power converter, wherein said additional current path (**path between Vout and Ground**) is a low impedance path.

Regarding claim 4: Gavrilă et al (**FIG1, FIG 2**) discloses power converter, wherein said low impedance path (**path between Vout and Ground**) comprises a resistor (**Zload, Rsense**).

Regarding claim 5: Gavrilă et al (**FIG 1, FIG 2, FIG 4, FIG 8, FIG 12**) discloses power converter, wherein said feedback means (**FB**) open said additional current path for a predetermined time (**col. 7, lines 15-27: predetermined value  $\geq V_{drop}$ ; predetermined time to open additional current path is decided based on the value of the element of the additional path**).

Regarding claim 6: Gavrilă et al (**FIG 1, FIG 2, FIG 4, FIG 8, FIG 12**) discloses power converter, wherein said feedback means close an opened additional current path (**path between Vout and Ground**) when a second predetermined output voltage is reached (**col. 7, lines 15-27; predetermined value  $< V_{drop}$ ; predetermined time to close additional current path is decided based on the value of the element of the additional path**).

Regarding claim 7: Gavrilă et al (**FIG 1, FIG 2, FIG 4, FIG 8, FIG 12**) discloses power converter, wherein said feedback means (**FB**) control an opened additional current path (**path between Vout and Ground**) based on said output voltage (**Vout**).

Regarding claim 8: Gavrilă et al (**FIG 1, FIG 2, FIG 4, FIG 8, FIG 12**) discloses power converter, wherein said feedback means (**FB**) control an opened additional current path (**path between Vout and Ground**) based on a current through said inductor (**Inductive DC Converter**).

Regarding claim 9: Gavrilă et al (**FIG 1, FIG 2, FIG 4, FIG 8, FIG 12**) discloses power converter, wherein said power converter is one out of a group of a buck converter, a boost converter and a buck/boost converter (**Inductive DC Converter; col. 1, lines 24-34**).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Gavrilă et al (USP 7,157,809) in view of Poon et al (USP 6,188,209).

Regarding claim 16: Gavrilă et al (**FIG 1, FIG 2, FIG 4, FIG 8, FIG 12**) discloses claimed invention except for power converter further comprising a first switch that is coupled between the power supply and the inductor, wherein the energy from the power

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supply is provided to the inductor via the first switch, and wherein the additional current path includes a controllable element for opening and closing the additional current path.

Poon et al (**FIG 9**) teaches the use of power converter comprising a first switch (**MS01**) that is coupled between the power supply (**501**) and the inductor (**LS02**), wherein the energy from the power supply (**501**) is provided to the inductor (**LS02**) via the first switch (**MS01**), and wherein the additional current path includes a controllable element (**S503**) for opening and closing the additional current path is well known in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inductive DC Converter disclosed by Gavrilă et al with the power circuit taught by Poon et al for the purpose of keeping the output voltage of the high speed buck-boost converter within the acceptable limits.

Regarding claim 17: Poon et al (**FIG 9**) teaches power converter further comprising a second switch (**MS02**) that is coupled between the inductor (**LS02**) and ground and that is coupled to the first switch (**MS01**).

Regarding claim 18: Poon et al (**FIG 9**) teaches power converter, wherein the controllable element (**S503**) inhibits the energy provided by the inductor from flowing through the additional current path when the additional current path is closed.

Regarding claim 10-14: Gavrilă et al in view of Poon et al (**see rejection of claims 1-9, 16-18 above**) discloses the apparatus at its normal operation performing the steps of method disclosed in claims 10-14.

***Response to Arguments***

5. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Prager et al (USP 6,522,108) discloses power converters with loss and noise reduction circuitry having additional path with controllable element.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to EMILY PHAM whose telephone number is (571)270-3046. The examiner can normally be reached on Mon-Thu (7:00AM - 6:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on (571) 272 - 2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jessica Han/  
Primary Examiner, Art Unit 2838  
February 2009

EP



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